POULTRY COSTS AND PROFITS

A six-year study of general farm flocks and semi-commercial flocks

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Bulletin 486

UNIVERSITY OF ILLINOIS
AGRICULTURAL EXPERIMENT STATION

Contents

Urbana, Illinois April, 1942

Publications in the Bulletin series report the results of investigations made or sponsored by the Experiment Station

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By R. H. Wilcox and L. E. Card[1]

FROM POULTRY OWNERS and prospective poultry owners thruout Illinois have come demands for reliable information on the cost of and income from poultry production. Particularly has the need for such information been felt by those who are operating or who contemplate operating a semicommercial poultry farm, and an increasing number of people are each year going into this specialized business.

The poultry industry, however, still depends on production from general farm flocks for the greater part of its poultry supplies, for 93 percent of all Illinois farms raise some poultry. The owners of these flocks also are interested in finding ways of reducing their costs and increasing their profits.

This bulletin represents an effort to obtain specific information about the costs and profits of this business, that will meet the needs of both groups of poultry producers—those whose flocks are merely a part of the farm, termed *general farm flocks* in this bulletin, and those whose flocks are operated as semicommercial units, termed *semicommercial poultry flocks.* The general farm flocks included in this study had an average of 106 birds, including growing stock, and the semicommercial poultry flocks an average of 434 laying birds. The study was made during the six-year period, 1932-1937. Early in the period, during the depression, agricultural prices were at unprecedented lows and later in the period, when recovery began, they rose rapidly.

Because the two types of enterprise are so differently handled and their relation to the farm and family economy is so different, they are treated entirely separately in this bulletin, and no attempt is made to compare them. A large part of the feed for typical general farm flocks of less than 150 hens is obtained from waste farm grains. These flocks are often cared for by unpaid family labor. Thus time and materials that might not otherwise be utilized are made to yield some return. The semicommercial poultry flocks, on the other hand, cannot make much use of waste farm grains. The semicommercial poultryman can seldom handle all his work with only the help of his family. His problem is either how to produce a superior product which will command a premium on the market or how to keep his costs low by efficient management.

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The 158 general farm flocks studied were located in Champaign and Piatt counties in east-central Illinois. These flocks were typical of those of the area and, so far as could be ascertained from the 1935

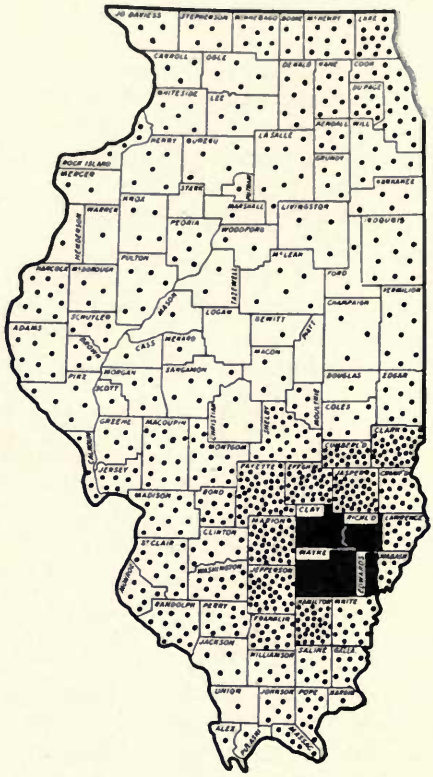

Fig. 1

Poultry farms are most numerous in southeastern Illinois. Each dot represents 10 farms on which 40 percent or more of the value of all farm products in 1929 came from poultry. (The black section indicates an area where such farms were too numerous to represent clearly by dots.)

U. S. Census, they did not differ to any marked degree from farm flocks in the rest of Illinois (Table 1).

The first semicommercial poultry flocks to be included in the study were located in southern Illinois, where many flocks contain 1,000 or more laying hens. In southeastern Illinois flocks with 400 or more laying hens are numerous (Fig. 1). In 1936 a group of flock owners in the Chicago area was added. Here too, as well as in the St. Louis area and near some of the smaller cities, flocks of 1,000 or more laying

TABLE 1.—GENERAL FARM FLOCKS: BIRDS PER FLOCK AND EGGS PRODUCED PER FLOCK, 1934

Section of Illinois	Number of birds over 3 months old	Number of eggs produced
		doz.
Northern[a]	102	570
Central	93	463
Southern[b]	99	551
Champaign and Piatt counties	98	479

[a]Including Cook, DeKalb, DuPage, Kane, Lee, Rock Island, Whiteside, and counties north.
[b]Including Bond, Clark, Cumberland, Effingham, Fayette, Madison, and counties south.

hens are becoming more common. Flock owners near these cities sell most of their eggs locally, but in other sections of Illinois many of them ship to eastern markets. A total of 243 flocks was studied.

The actual farm value of items of production was used in all records. Feed that was grown on the farm was charged at the farm price (market price less marketing cost). When feed was purchased, the amount paid for it was used in every instance. Adult labor was charged at 15 cents an hour, and the time children spent with poultry was converted into adult work hours according to each child's performance. Horse labor was charged at 10 cents an hour; the use of an automobile or truck was charged at 5 cents a mile. In the study of the semicommercial flocks all the items of feed, labor and overhead for buildings and equipment and all the cash expenditures were separated between the layers and the young stock.

GENERAL FARM FLOCKS

Scope of the Study

The cost information on the general farm flocks was obtained in connection with a complete, detailed farm-cost study being conducted on the same farms. The records gave full cost and income figures for the whole poultry enterprise but did not give figures for the mature and young stock separately. Records were kept for the calendar year. Inventories of poultry, buildings, and equipment were made on each farm as near January 1 as possible.

A large part of the cost and some of the income of the general farm flocks are noncash, for most of the general farm flocks in this analysis were maintained on feed grown at home, cared for in most instances by the owner's family, and often housed in the landlord's buildings. Therefore if poultry had not been kept, a relatively large proportion of all the farm feed, family labor, and farm buildings that maintained the farm flock would not have been utilized and so would not have added to the farm income.

The purpose of this cost and income analysis of general farm flocks, consequently, was not only to deal with costs and incomes in dollars and cents but also to measure the quantities of feed and labor utilized and the quantities of eggs and meat produced. Another purpose was to obtain such measures of enterprise efficiency as receipts per unit of feed, per unit of labor, or per unit of capital.

Costs of production fluctuated widely during the six years of this study because of the violent differences from year to year in the cost of feeds. For instance, in 1932 when the price of corn fed to poultry averaged 22 cents a bushel for the year, the gross cost of carrying 100 laying birds was $190; in 1934 when corn advanced to 56 cents a bushel, it rose to $271; in 1937 when corn advanced to 91 cents a bushel, it increased to $421 (Table 7).

Poultry costs do not fluctuate to the same extent as do grain prices, however, for two reasons: (1) costs other than feed costs do not always move in the same way as feed costs; and (2) altho total feed costs per bird mount as the price of grain rises, they do not advance to the same extent as do grain prices because of the tendency under those circumstances for the owner to reduce the feed per bird.

Size of Flocks and Farms

The general farm flocks included in this study contained an average of 106 birds, including growing stock. The farms averaged 261 acres. The average annual value of eggs and meat sold, plus the increase in the poultry inventory and the value of the poultry and eggs used at home, totaled $287 per flock (Table 3), which was 5 percent of the gross farm income.

Seventy-three percent of the flock income was derived from the sale of eggs and poultry. About one-fifth (19.9 percent) of it was in the form of poultry and eggs used by the operator and his family. The remaining 7 percent was increased inventory value and value of manure.

Financial Record of Average Flock

Capital investment. The annual fixed capital investment per flock averaged $293, or $2.79 per bird (Table 2). Capital in poultry buildings constituted 52 percent; in poultry stock, 34 percent; and in equipment, 14 percent.

The average annual expense required to repair and maintain the fixed investment of buildings and equipment totaled $31 per flock. In addition to the cash items this expense figure includes interest on capital at 5 percent and annual depreciation of 3 percent on investment in buildings and 10 percent on investment in equipment.

Receipts. When the cash value of eggs and meat used in the

TABLE 2.—GENERAL FARM FLOCKS: CAPITAL INVESTMENT

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	19	29	34	24	27	25	26
Number of birds per flock	127	113	101	94	106	96	106
Average number of eggs, dozens	909	823	682	726	674	816	789
Investment per flock							
Poultry buildings	$143.45	$141.38	$153.49	$149.29	$152.55	$167.08	$151.21
Equipment and supplies	49.33	43.23	41.87	46.76	38.54	39.83	43.26
Poultry stock	121.27	90.87	72.05	81.58	119.18	108.88	98.97
Total	$314	$275	$267	$278	$310	$316	$293
Percent of investment in—							
Poultry buildings	46	51	57	54	49	53	52
Equipment and supplies	16	16	16	17	13	13	14
Poultry stock	38	33	27	29	38	34	34
Investment							
Per bird	$ 2.47	$ 2.45	$ 2.66	$ 2.94	$ 2.93	$ 3.30	$ 2.79
Per 100 dozen eggs	34.55	33.47	39.21	38.24	46.03	38.70	38.37
Building and equipment expense[a]							
Per flock	$34.59	$28.11	$32.04	$27.94	$29.77	$30.95	$30.56
Per bird	.27	.25	.32	.30	.28	.32	.29
Per 100 dozen eggs	3.81	3.42	4.70	3.85	4.42	3.79	4.00

[a]Equipment consisted principally of feeding and watering utensils, brooder stoves, portable brooder houses, and other movable equipment. Supplies (a small portion of the total inventory) were brooder fuel, grit and oyster shells, disinfectants, and egg cases on hand at the beginning of the year. As these farm flocks had the free range of the farm, a definite land charge to be borne by poultry was not determined.

home is included as part of the income from the farm flock, the average annual flock income adds up to $298, or $2.81 per bird (Table 3). Meat[1] contributed 48 percent to this total; eggs, 48 percent; and manure, 4 percent.

Many flock owners do not realize the extent to which the flock contributes directly to the living of the family. These families used annually an average of 201 dozen eggs from their flocks and 41 birds of varying ages and weights. The total value of this food was $59 (Table 3). The real income was distributed as follows between cash sales and home consumption of meat and eggs:[2]

Meat sold	38 percent
Meat used at home	7 percent
Eggs sold	35 percent
Eggs used at home	13 percent

Expenses. The average total expense incurred annually in keeping an average of 106 birds was $288 (Table 4). This total includes the expenses of (1) producing or buying replacements; (2) feeding, housing, and caring for mature birds; (3) equipment and supplies

[1]During the same period the commercial flocks in this study got only 20 percent of their income from meat; 75.7 percent from eggs; 4 percent from manure; and .3 percent from custom hatching (see Table 10, page 16).

[2]Increase in stock inventory and value of manure made up rest of real income.

TABLE 3.—GENERAL FARM FLOCKS: RECEIPTS PER FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	19	29	34	24	27	25	26
Number of birds per flock	127	113	101	94	106	96	106
Average price per dozen eggs (cents)	16	14	19	24	23	22	19
Receipts and inventory increases per flock							
Income from eggs	$143.45	$107.77	$115.14	$171.98	$148.06	$174.10	$143.42
Egg sales	106.92	78.31	77.06	122.77	112.44	128.67	104.36
Eggs used in household	36.53	29.46	38.08	49.21	35.62	45.43	39.06
Income from meat[a]	113.01	90.33	127.64	169.41	162.65	196.06	143.18
Poultry sales	97.20	70.32	90.09	120.68	139.39	167.73	114.23
Poultry used in household	15.81	20.01	13.42	20.92	23.26	28.24	20.28
Increase in stock inventory	.....	.....	24.13	27.81	.....	.09	8.67
Manure	12.55	12.20	11.32	10.31	10.88	11.89	11.52
Total	$269	$210	$254	$352	$322	$382	$298
Unit receipts and inventory increases							
Per bird	$ 2.12	$ 1.87	$ 2.52	$ 3.73	$ 3.04	$ 3.99	$ 2.81
Per $100 worth of feed	383	262	233	266	216	185	240
Per $100 invested	86	76	95	127	104	121	102
Per 100 hours of man labor	83	70	92	137	121	138	107

[a]Some receipts classified as meat are increases in the value of the birds in the closing inventory over their value in the opening inventory.

used in brooding chicks and maintaining mature stock; and (4) feeding cockerels and pullets to be sold as springers.

The expense of producing replacement stock is included in Table 4. It covers rearing costs in addition to the cost of (1) eggs used for

TABLE 4.—GENERAL FARM FLOCKS: EXPENSES PER FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	19	29	34	24	27	25	26
Number of birds per flock	127	113	101	94	106	96	106
Expenses and inventory decreases							
Buildings	$10.67	$ 7.57	$ 9.12	$ 7.39	$ 6.40	$ 9.02	$ 8.36
Equipment and supplies	8.22	6.77	9.55	10.08	7.86	6.14	8.10
Baby chicks, eggs, and hatching	23.27	20.97	27.23	34.10	31.86	31.06	28.08
Feed	70.25	80.25	109.00	132.41	148.79	206.10	124.47
Decrease in stock inventory	26.45	7.63	.....	.....	10.74	.....	7.47
Man labor[a]	51.75	48.71	47.39	50.62	54.15	64.18	52.80
Horse labor[a]	1.00	1.38	1.16	1.79	.77	1.62	1.29
Automobile and truck[a]	1.75	3.24	2.08	1.87	5.66	2.28	2.81
Straw, bedding, and litter	.80	.74	3.28	2.54	3.20	3.96	2.42
Miscellaneous expense	35.10	33.69	37.12	33.55	40.43	44.98	37.48
Interest on capital at 5 percent	15.70	13.77	13.37	13.88	15.51	15.79	14.67
Total	$245	$225	$259	$288	$325	$385	$288
Unit expenses and inventory decreases							
Per $100 income	$91	$107	$102	$82	$101	$101	$97
Per $100 invested	78	82	97	105	105	122	98

[a]Adult labor was charged at 15 cents an hour, horse labor at 10 cents an hour, and use of an automobile or truck at 5 cents a mile. Children's labor was converted into adult work hours according to each child's performance.

TABLE 5.—GENERAL FARM FLOCKS: AVERAGE ANNUAL RECEIPTS, EXPENSES, AND PROFITS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	19	29	34	24	27	25	26
Number of birds per flock	127	113	101	94	106	96	106
Receipts and inventory increases	$269.01	$210.30	$254.10	$351.70	$321.59	$382.05	$298.12
Expenses and inventory decreases	244.96	224.72	259.30	288.23	325.37	385.13	287.95
Profit	$ 24.05	$−14.42	$−5.20	$ 63.47	$−3.78	$−3.08	$ 10.17
Man labor[a]							
Total charge	$ 51.75	$ 48.71	$ 47.39	$ 50.62	$ 54.15	$ 64.18	$ 52.80
Return	75.80	34.29	42.19	114.09	50.37	61.10	62.97
Total hours of man labor	324	301	277	257	265	278	284
Return per hour of labor	$.23	$.11	$.15	$.44	$.19	$.22	$.22

[a]See footnote to Table 4.

hatching, (2) chicks purchased, and (3) incubation of farm-produced eggs at commercial hatcheries.

Home-grown feeds fed to both the laying flock and the replacement stock were charged at current monthly farm prices. The labor of a flock owner and his family was charged at current wages for hired help.

Profits. In addition to poultry receipts large enough to pay farm prices for all feed fed, current wages for himself and his family, and 5 percent interest on his capital in buildings, equipment, and the flock, the owner of the average farm flock in this study had an annual profit of $10 during this period of severe depression and recovery, 1932-1937 (Table 5).

On most of the general farms studied, nearly all the gross receipts of $298 was a profit in the sense that it was a return from home-grown feed and family labor that without the poultry enterprise would probably not have been utilized.

Amounts and Kinds of Feed Fed

A precise measure of farm grains consumed by poultry could not always be determined because nearly every general farm flock in the study was allowed free range of the entire farm. With this exception the amounts of feed that were used for general farm flocks were as shown in Table 6.

An average of approximately 99 pounds of feed was fed per mature bird to maintain it, to produce replacement stock, and to feed the broilers, cockerels, friers, and pullets sold. Only in 1937 did an increase in the amount of feed fed appear to increase the egg production per hen.

TABLE 6.—GENERAL FARM FLOCKS: FEED FED PER 100 HENS IN THE LAYING FLOCK
(Figures represent quantities of feed fed to all the poultry on the farm divided by number of hundreds of hens in the laying flock)

Kind of feed	1932	1933	1934	1935	1936	1937	Six-year average
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Grain							
Corn	4 823	5 913	4 968	5 214	5 878	6 829	5 604
Oats	1 594	1 795	1 178	1 290	1 797	2 522	1 696
Wheat	1 999	849	876	784	313	582	901
Other	57	64	13	35	....	....	28
Total	8 473	8 621	7 035	7 323	7 988	9 933	8 229
Mill feeds							
Bran	17	3	44	177	191	193	104
Shorts	12	72	14	186	116	88	82
Middlings	....	6	111	198	112	184	102
Other	21	9	....	5	3	....	6
Total	50	90	169	566	422	465	294
Mixed mash	180	238	453	644	569	807	482
Protein supplement							
Milk and buttermilk	2 487	1 906	3 996	2 085	2 276	2 250	2 449
Dry basis[a]	236	181	380	198	216	214	233
Meat scraps	311	261	204	519	220	191	284
Soybean meal	115	35	41	29	100	121	74
Other	239	81	73	50	101	161	117
Total	901	558	698	796	637	687	708
Minerals and grit	106	69	55	80	220	369	150
Condiments	....	....	....	....	7	8	2
Cod-liver oil, gallons	(b)	(b)	(b)	.4	.2	.1	.1
Total feed	9 710	9 576	8 410	9 409	9 843	12 269	9 865
Eggs produced per bird	86	88	81	92	76	102	87

[a]Skimmilk and buttermilk have been reduced to dry basis by multiplying the pounds of milk fed by .095 (*Feed and Feeding*, Morrison, pp. 978 and 988, 1936 edition).
[b]The amount was less than .1 gallon.

Corn was fed in larger amounts than any other feed; oats and wheat ranked second and third. Corn made up 68 percent of all the farm grain fed and 59 percent of all the concentrates. Oats made up 18 percent of all the concentrates fed, and wheat 10 percent. These three grains constituted 87 percent, by weight, of all the concentrates fed. However, milk and buttermilk were also important feeds, approximately 3 gallons being fed annually per mature bird in the flock.

Returns to Feed Fed

When all the gross receipts are counted as the returns from the feed fed (or, stated another way, when feed is assumed to be the only cost), the poultry in this study usually made a good profit. When all labor is furnished by the farm family and no unusually heavy expense is incurred on poultry buildings and equipment, the receipts for $100 worth of feed at farm prices plus inventory increases are a safe measure of the success of the general-farm poultry enterprise. In these flocks the average annual receipts and inventory increases per $100

worth of feed fed were $240 for the six years (Table 3). They were as low as $185 in 1937, when feed prices were high, and as high as $383 in 1932, when feed prices were low. Feed was the most important item of cost (Table 4); it amounted to 43.2 percent of the gross cost.

Returns to Labor

With the exception of feed, labor is the largest item of expense in poultry production. Even when all the labor was furnished by the farm, it is interesting to know what the return for it actually was—how much the operator of the farm received for the efforts he and his family and any hired labor put into the enterprise.

In order to arrive at such figures, it is necessary first to charge against the business *all* the feeds used—at their cost if purchased, at their farm price if farm-grown. When everything else which was used in the production of poultry except labor was charged at what those things would have cost at the local market, the net return averaged $63 a year per farm (Table 5). This may then be considered the return for the labor put into the enterprise, which was 284 hours a year, or 28 ten-hour man-days. As the major portion of the labor was furnished by the operator and his family, the poultry enterprise may be credited with having increased the family income by 22 cents an hour for the hours spent on it. The rate varied, however, from 11 cents in 1933 to 44 cents in 1935.

Unit Costs of Production

In determining the net costs of carrying a unit of birds or of producing a dozen eggs, three important items must be considered in addition to flock expenses; namely, mortality loss, income from sale of meat, and value of manure.

1. *Mortality loss.* A flock owner must start the year with enough extra hens to make up for a normal mortality loss, which in these flocks was 22 percent of the average number of hens.[1] He will have to charge the enterprise with the amount of this loss.

2. *Income from sale of meat.* When poultry are so fed and handled that the closing inventory plus sales is larger than the opening inventory plus mature stock purchases, the increase in value is considered a credit to the business and should be deducted from the gross costs. In Table 7 costs designated as per 100 laying birds include combined costs of hens and replacement stock.

3. *Value of manure.* This also should be deducted from the gross costs.

Cost of carrying 100 laying birds. The average yearly net cost

[1]Average number of hens was determined by first obtaining the monthly average (average of number on hand the first of each month beginning with January and the close of each month), then adding these monthly averages and dividing by 12 to obtain the yearly average.

of carrying 100 laying birds was $128. Highest cost was $185 in 1937 and lowest was $94 in 1932.

The detailed items making up these costs are given in Table 7. Feed was the most important item; it amounted to $122 (42 percent of the gross cost, $289). Labor amounted to $50 (17 percent), build-

TABLE 7.—GENERAL FARM FLOCKS: ANNUAL COST OF CARRYING 100 LAYING BIRDS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses							
Eggs for hatching, hatching, and chicks	$18.32	$18.62	$27.05	$36.17	$30.08	$32.46	$27.12
Mortality	17.96	14.11	12.90	16.18	23.89	18.83	17.31
Feed	55.32	71.25	108.26	140.41	140.46	215.41	121.85
Man labor[a]	40.75	43.25	47.07	53.68	51.13	67.08	50.49
Horse labor[a]	.79	1.23	1.15	1.90	.73	1.69	1.25
Auto, truck, and tractor[a]	1.38	2.87	2.07	1.98	5.35	2.39	2.68
Buildings and equipment	14.87	12.73	18.55	18.52	13.46	15.84	15.66
Bedding, straw, and litter	.63	.66	3.26	2.69	3.02	4.14	2.40
Miscellaneous	27.64	29.92	36.87	35.57	38.16	47.01	35.86
Total	$177.66	$194.64	$257.18	$307.10	$306.28	$404.85	$274.62
Interest on capital at 5 percent							
Buildings and equipment	$ 7.59	$ 8.19	$ 9.70	$10.40	$ 9.02	$10.81	$ 9.28
Stock	4.77	4.04	3.58	4.32	5.62	5.69	4.67
Total	$12.36	$12.23	$13.28	$14.72	$14.64	$16.50	$13.95
Gross cost	$190	$207	$271	$322	$321	$421	$289
Deductions							
Stock appreciation	$86.12	$87.54	$139.68	$195.81	$167.31	$223.74	$150.03
Manure	9.88	10.84	11.24	10.94	10.27	12.43	10.93
Total	$ 96.00	$ 98.38	$150.92	$206.75	$117.58	$236.17	$160.96
Net cost	$ 94	$108	$120	$115	$143	$185	$128
Per bird	.94	1.08	1.20	1.15	1.43	1.85	1.28
Eggs produced per bird	86	88	81	92	76	102	87
Farm price of corn per bushel	$ .22	$ .31	$ .56	$ .71	$ .73	$ .91	$ .50

[a]See footnote to Table 4.

ings and equipment, $16 (6 percent); interest on capital in stock, buildings, and equipment, $14 (5 percent); and all other expenses, $87 (30 percent).

Cost of producing a dozen eggs. The net cost of producing a dozen eggs was 17.5 cents (Table 8). Eggs sold at an average of 19.4 cents a dozen. Sale of meat and flock appreciation amounted to 20.4 cents a dozen eggs.

Poultry Enterprise a Definite Asset

The records on general farm flocks for the six years 1932-1937, a period that included several severe depression years, show the following facts: The average flock returned to its owner a gross receipt of $240 annually for every $100 worth of feed fed and charged at local

farm prices. When all other items were charged at local market costs, the general farm flock returned to its owners 22 cents an hour in wages. It cost 17.5 cents to produce a dozen eggs that sold for 19.4 cents.

While the flocks returned a very small profit when every cost was charged against the enterprise, they returned a substantial profit when

TABLE 8.—GENERAL FARM FLOCKS: COST OF PRODUCING A DOZEN EGGS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*
Eggs for hatching, hatching, and chicks	2.56	2.55	3.99	4.70	4.73	3.80	3.72
Mortality	2.51	1.93	1.90	2.10	3.75	2.21	2.40
Feed	7.73	9.76	15.97	18.24	22.07	25.24	16.50
Man labor[a]	5.70	5.92	6.94	6.97	8.03	7.86	6.90
Horse labor[a]	.11	.17	.17	.25	.11	.20	.17
Auto, truck, and tractor[a]	.19	.39	.31	.26	.84	.28	.38
Buildings and equipment	2.08	1.74	2.74	2.40	2.12	1.85	2.16
Bedding, straw, and litter	.09	.09	.48	.35	.48	.49	.33
Miscellaneous	3.86	4.10	5.44	4.62	6.00	5.51	4.92
Total	24.83	26.65	37.94	39.89	48.13	47.44	37.48
Interest on capital at 5 percent							
Buildings and equipment	1.06	1.12	1.43	1.34	1.42	1.26	1.27
Stock	.67	.55	.53	.56	.88	.67	.64
Total	1.73	1.67	1.96	1.90	2.30	1.93	1.91
Gross cost	26.56	28.32	39.90	41.79	50.43	49.37	39.39
Deductions							
Sale of meat and stock appreciation	12.04	11.98	20.61	25.43	26.29	26.22	20.43
Manure	1.38	1.49	1.66	1.42	1.62	1.45	1.50
Total	13.42	13.47	22.27	26.85	27.91	27.67	21.93
Net cost	13.14	14.85	17.63	14.94	22.52	21.70	17.46
Price of eggs per dozen	16.0	13.6	18.6	24.5	22.7	22.1	19.4
Eggs produced per bird	86	88	81	92	76	102	87

[a]See footnote to Table 4.

it is considered that they provided returns from farm resources that would not otherwise have been utilized. Few if any livestock enterprises made a better financial showing than did poultry during the depression years.

The owner or the prospective owner of a general farm flock is of course interested in the efficiency of the poultry enterprise in comparison with other farm enterprises. He should also be interested in the comparative efficiency of the poultry flock and other livestock in utilizing family labor, home-grown feed, and such farm buildings as he already has.

The fewer the cash costs the more likely are farmers to consider the poultry enterprise an asset in their general farming business, especially since it is a year-around source of food for the farm family.

SEMICOMMERCIAL POULTRY FLOCKS

Scope of the Study

An increasing number of Illinois farmers are engaging in poultry production on a semicommercial basis; that is, they are obtaining on small farms the major part and on extensive farms a large part of their incomes from eggs and poultry. A study of poultry expenses and incomes on a group of these semicommercial poultry farms was made during the same years as the study of general farm flocks, 1932-1937, and therefore under the same price-levels. These flocks contained an average of 434 laying birds, whereas the general farm flocks had an average of only 106 birds, including growing stock.

Records on these semicommercial flocks were kept for the fiscal year beginning October 1, which is the approximate date when most Illinois poultrymen place their pullets in the laying house.[1] The inventory was based on a count of the different classes and ages of birds, and their market value in each class. The different classes consisted usually of hens over one year of age, pullets, cocks, cockerels, and market poultry. Thus the inventory value of the different classes of birds was affected both by changes in numbers and by fluctuations in the poultry market.

Only poultry expenses and incomes are presented here. Returns from other kinds of livestock or crops produced on these farms have been disregarded. Even home-grown crops that were fed were charged to the flocks at local market prices.

Average Expenses, Receipts, and Profit

Capital investment. Total investment per farm in stock, land, buildings, equipment, and the miscellaneous feed and supplies on hand October 1 averaged $1,430, or $3.29 a hen (Table 9), for the six-year period.

The average annual investment expense—that is, the amount needed to keep the plant in usable condition and to cover 5 percent interest on the invested capital—was 27 cents per hen or 2.5 cents per dozen eggs.

Of the average annual fixed capital investment, 65 percent was in land and buildings and 27 percent in stock. Only the land and build-

[1]A special poultry cost-accounting book printed in 1932 enabled owners of semicommercial poultry flocks to keep a detailed record of finances and management practices. Among these records were those on daily egg production, flock expenses and receipts, feeds fed, brooding and incubation expenses, and hen and young stock mortality. With this book a more detailed record on the young growing stock could be kept than with books kept by the owners of general farm flocks.

TABLE 9.—SEMICOMMERCIAL POULTRY FLOCKS: AVERAGE CAPITAL INVESTMENT IN ENTIRE FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	21	20	37	36	63	66	40
Number of hens per flock	510	510	430	422	357	376	434
Number of eggs per flock, dozens	5 955	5 570	4 529	4 601	3 607	4 168	4 738
Investment per flock							
Land and buildings	$1 173.44	$965.92	$858.49	$859.95	$866.43	$832.77	$926.16
Equipment and supplies	96.65	101.51	85.42	70.14	66.13	75.28	82.52
Poultry stock	486.27	362.69	360.29	320.41	398.37	422.84	391.81
Feeds	39.10	35.80	12.54	22.13	14.59	22.24	24.40
Straw and bedding	6.25	4.22	2.77	3.75	3.13	4.30	4.07
Eggs on hand on October 1	.....	.....	.....	.82	2.73	1.84	.90
Total	$1 802	$1 470	$1 320	$1 277	$1 351	$1 359	$1 430
Unit investment							
Per hen	$ 3.53	$ 2.88	$ 3.07	$ 3.03	$ 3.79	$ 3.62	$ 3.29
Per 100 dozen eggs	30.26	26.39	29.13	27.76	37.47	32.61	30.18
Investment expense							
Per flock	$159.62	$128.16	$104.45	$105.46	$104.80	$110.52	$118.83
Per hen	.31	.25	.24	.25	.29	.29	.27
Per 100 dozen eggs	2.68	2.30	2.31	2.29	2.91	2.65	2.51

TABLE 10.—SEMICOMMERCIAL POULTRY FLOCKS: AVERAGE RECEIPTS FROM ENTIRE FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	21	20	37	36	63	66	40
Number of hens per flock	510	510	430	422	357	376	434
Number of eggs sold per flock, dozens	5 734	5 477	4 359	4 378	3 344	3 939	4 538
Receipts and net inventory increases							
Receipts from eggs—							
Inventory increase	.....	$ .04	$ 2.72	$ .27	$ .18	.....	$ .53
Market sales	$880.24	777.11	652.86	928.13	711.39	$891.67	806.90
Sales of hatching eggs	21.49	41.17	57.71	103.35	82.67	72.22	63.10
Eggs used in household	27.89	34.91	30.65	48.71	48.71	56.82	41.28
Receipts from meat—							
Sale of mature stock	$ 61.26	$ 54.99	$ 63.00	$ 89.52	$127.91	$109.42	$ 84.35
Sale of young stock	78.70	84.20	123.75	115.62	121.47	113.86	106.27
Poultry used in household	16.27	15.66	12.79	20.89	23.78	29.15	19.77
Increase in inventory	.....	19.29	.....	108.76	16.40	33.29	29.62
Miscellaneous	2.63	4.14	1.74	6.17	4.71	2.18	3.59
Manure	49.13	46.34	47.53	51.75	48.20	57.31	50.04
Total	$1 138	$1 078	$993	$1 473	$1 185	$1 366	$1 205
Unit receipts and net inventory increases							
Per 100 hens	$223	$211	$231	$349	$332	$363	$278
Per $100 of labor cost	673	634	679	1 026	877	999	803
Per $100 invested	63	73	75	115	88	100	84

TABLE 11.—SEMICOMMERCIAL POULTRY FLOCKS: AVERAGE EXPENSES OF ENTIRE FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Expenses and inventory decreases							
Buildings	$ 32.90	$ 22.89	$ 23.13	$ 25.24	$ 24.41	$ 22.95	$ 25.25
Equipment and supplies	36.63	31.76	15.34	16.36	12.82	19.60	22.09
Baby chicks, eggs, and hatching	86.67	71.10	71.35	90.27	90.73	104.43	85.75
Feed	438.29	419.31	502.51	702.99	572.07	810.33	574.25
Stock depreciation	31.38	.....	.35	.....	.....	.....	5.29
Man labor[a]	168.97	169.88	146.12	143.61	135.10	136.68	150.06
Horse labor[a]	12.72	9.75	4.48	8.53	5.65	4.17	7.55
Automobile and truck[a]	6.98	1.79	2.04	7.48	7.76	16.23	7.05
Straw, bedding, and litter	8.84	7.06	6.09	10.23	12.74	12.24	9.53
Miscellaneous expense	40.86	20.75	22.44	25.68	21.39	17.37	24.75
Interest on capital at 5 percent	90.09	73.51	65.98	63.86	67.57	67.97	71.50
Total	$954	$828	$860	$1 094	$950	$1 212	$983

[a]Adult labor was charged at 15 cents an hour, horse labor at 10 cents an hour, and use of an automobile or truck at 5 cents a mile. Children's labor was converted into adult work hours according to each child's performance.

ings actually used by poultry were considered as investment in this study; the owner's house was not included.

Receipts. Slightly over two-thirds of the average annual flock income was from market eggs. The total number of dozens sold per year, including a few hatching eggs, averaged 4,538. These eggs sold for $807 (Table 10), which means that the eggs sold per hen were worth a yearly average of $1.86.

Other income, including inventory increases, poultry and eggs used in the house, and manure sold or credited, brought the yearly receipts to an average of $1,205 a flock, or $2.78 a hen. This income was equivalent to $803 for each $100 worth of labor put into the enterprise, or to $84 for each $100 invested in stock, land, buildings, and equipment.

Expenses. The total annual expenses per flock averaged $983. The largest single items were feed, $574, and labor, $150 (Table 11). The quantities of feed fed tended to increase as prices declined and to decrease as prices rose.

The farm value of the corn fed to this poultry varied from an average of 28 cents a bushel in the year of lowest average feed prices (1933) to over three times that amount, 98 cents a bushel, in the year of highest average feed prices (1937). The total average feed cost per farm was also lowest in 1933 but that year it was well above one-third of the total feed cost in 1937.

Chick expense, which included chicks bought, hatching eggs bought, and custom hatching, amounted to $86; and interest on the fixed capital in the business came to $71.50. The repairs, upkeep, and depreciation was $25 on buildings and $22 on equipment.

Profit. A striking feature of these records is that they consistently show profits during years of high feed prices (1936 and 1937) as well as during years of low feed prices (1932 and 1933).

The average annual profit for the six-year period was $222 (Table 12). This figure was obtained by deducting from the gross income not only all cash items of expense but also two important non-cash items—interest on capital at 5 percent and current farm wage rates for the operator and his family.

If the total of all expenses except wages is subtracted from farm income, the balance is the income to labor. The average income to hired and operator's labor per flock for the six years was $372, or 86 cents a hen (Table 12).

Unit Costs of Production

Net flock cost per 100 hens. The net flock cost on these poultry farms averaged $213 per 100 hens (Table 13). This figure includes feed, labor, and other expenses for replacement stock as well as for the

TABLE 12.—SEMICOMMERCIAL POULTRY FLOCKS: AVERAGE RECEIPTS, EXPENSES, AND PROFITS OF ENTIRE FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	21	20	37	36	63	66	40
Number of hens per flock	510	510	430	422	357	376	434
Receipts and inventory increases	$1 138	$1 078	$ 993	$1 473	$1 185	$1 366	$1 205
Expenses and inventory decreases	954	828	860	1 094	950	1 212	983
Profit	$ 184	$ 250	$ 133	$ 379	$ 235	$ 154	$ 222
Man labor[a]							
Total charge	$ 169	$ 170	$ 146	$ 144	$ 135	$ 137	$ 150
Return	352	420	279	522	370	291	372

[a]See footnote to Table 11.

mature birds, but it also includes as part of flock appreciation the income from the sale of broilers, cockerels, and pullets.

The principal item of flock expense per 100 hens was feed, which averaged $138 a year during the six-year period. Seventy-two percent of this feed was purchased. Of next importance were man labor (daily

TABLE 13.—SEMICOMMERCIAL POULTRY FLOCKS: ANNUAL FLOCK COST OF 100 HENS INCLUDING REPLACEMENT STOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses							
Stock depreciation	$ 6.15	.....	$ .08	.....	.....	.....	.....
Baby chicks, eggs, and hatching	17.00	$ 13.94	16.59	$ 21.39	$ 25.42	$ 27.77	$ 20.35
Feed	85.94	82.22	116.86	166.59	160.24	215.51	137.89
Farm-grown	21.88	23.00	40.13	46.15	44.72	54.36	38.37
Purchased	64.06	59.22	76.73	120.44	115.52	161.15	99.52
Man labor[a]	33.13	33.31	33.98	34.03	37.85	36.35	34.77
Chores	26.00	26.13	27.32	26.47	31.52	29.30	27.79
Special	7.13	7.18	6.66	7.56	6.33	7.05	6.98
Horse labor[a]	2.50	1.91	1.04	2.02	1.58	1.11	1.69
Auto and truck[a]	1.37	.35	.48	1.77	2.17	4.32	1.75
Buildings	6.45	4.49	5.38	5.98	6.84	6.10	5.87
Equipment	7.18	6.23	3.57	3.88	3.59	5.21	4.94
Straw, bedding, litter	1.73	1.38	1.42	2.42	3.57	3.26	2.30
Miscellaneous	8.01	4.07	5.22	6.09	5.99	4.62	5.67
Total	$169.46	$147.90	$184.62	$244.17	$247.25	$304.25	$215.23
Interest on capital at 5 percent							
Land and buildings	$ 11.50	$ 9.47	$ 9.98	$ 10.19	$ 12.13	$ 11.08	$ 10.72
Equipment	.95	.99	.99	.83	.93	1.00	.95
Stock	4.77	3.56	4.19	3.80	5.58	5.62	4.59
Feed and bedding	.44	.39	.18	.30	.25	.35	.32
Eggs on hand	.....	.....	.....	.01	.04	.03	.01
Total	$17.66	$ 14.41	$ 15.34	$ 15.13	$ 18.93	$ 18.08	$ 16.59
Gross cost	$187	$162	$200	$359	$266	$322	$232
Deductions							
Stock appreciation	.....	$ 3.78	.....	$ 25.77	$ 4.59	$ 8.85	$ 6.12
Manure	$ 9.63	9.09	$ 11.05	12.26	13.50	15.24	11.79
Miscellaneous	.52	.81	.41	1.46	1.32	.58	.85
Total	$ 10.15	$ 13.68	$ 11.46	$ 39.49	$ 19.41	$ 24.67	$ 18.76
Net cost	$177	$149	$188	$220	$247	$298	$213

[a]See footnote to Table 11.

TABLE 14.—SEMICOMMERCIAL POULTRY FLOCKS: ANNUAL COST OF CARRYING 100 HENS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses							
Stock depreciation	$ 19.08	$ 14.23	$ 14.40	.....	$ 12.22	$ 14.89	$ 12.29
Mortality	19.67	14.03	16.62	$ 16.58	25.56	22.78	19.21
Feed	66.04	60.54	86.08	112.25	114.18	161.94	101.84
Farm-grown	17.69	17.24	31.91	39.03	34.50	45.32	30.95
Purchased	48.35	43.30	54.17	83.22	79.68	116.62	70.89
Man labor[a]	24.40	24.13	25.13	24.03	26.14	26.06	24.98
Chores	18.86	18.46	19.93	18.11	21.40	20.17	19.49
Special	5.54	5.67	5.20	5.92	4.74	5.89	5.49
Horse labor[a]	2.02	1.67	.95	1.84	1.47	.93	1.48
Auto and truck[a]	1.12	.24	.46	1.58	1.67	3.94	1.50
Buildings	5.09	3.49	3.95	4.55	5.07	4.46	4.43
Equipment	5.74	4.70	2.16	2.44	2.10	3.55	3.45
Straw, bedding, litter	1.29	.96	1.16	1.88	2.86	2.58	1.79
Miscellaneous	6.22	3.47	3.96	4.55	4.05	3.20	4.24
Total	$150.67	$127.46	$154.87	$179.70	$195.32	$244.33	$175.21
Interest on capital at 5 percent							
Land and buildings	$ 9.58	$ 7.98	$ 8.59	$ 8.13	$ 9.46	$ 8.49	$ 8.70
Equipment	.47	.34	.36	.28	.32	.40	.36
Stock	4.77	3.47	4.17	3.79	5.44	5.42	4.51
Bedding and litter	.06	.04	.03	.04	.04	.05	.05
Feed	.38	.35	.15	.26	.30	.29	.29
Eggs on hand	.....	.....	.....	.01	.04	.02	.01
Total	$ 15.26	$ 12.18	$ 13.30	$ 12.51	$ 15.60	$ 14.67	$ 13.92
Gross cost	$166	$140	$168	$192	$211	$259	$189
Deductions							
Stock appreciation	.....	.....	.....	$ 1.05	.....	.....	.....
Manure	$ 8.25	$ 8.20	$ 9.53	10.42	$ 10.98	$ 12.93	$ 10.05
Miscellaneous	.14	.....	.....	.43	.48	.18	.20
Total	$ 8.39	$ 8.20	$ 9.53	$ 11.90	$ 11.46	$ 13.11	$ 10.25
Net cost	$158	$131	$159	$180	$199	$246	$179
Farm price of corn per bushel	.34	.28	.52	.82	.66	.98	.69

[a]See footnote to Table 11.

chores and special work on poultry), $35; baby chicks, eggs for hatching, and cost of hatching, $20; and interest at 5 percent on the capital in stock, buildings, and equipment, $16. Deductions averaging $18.76 for meat, manure, and miscellaneous items were more than enough to offset the 5 percent interest on invested capital.

Net cost of carrying 100 hens. This cost for one year, without including any replacement costs, was $179 (Table 14). Highest cost items were: feed, $102; labor, $25; mortality, $19; and stock depreciation, $12. Total operating expenses were $175. Interest on the invested capital at 5 percent amounted to $14; credits for manure and miscellaneous items totaled $10.

Net cost of producing a dozen eggs. Without including a replacement charge, the average net cost was 16.6 cents a dozen eggs (Table 15). The four major items of cost were: feed, 9.5 cents; labor, 2.3 cents; mortality, 1.8 cents; and stock depreciation, 1.1 cents. As the average selling price was 19.8 cents a dozen (Table 15), the profit was 3.2 cents a dozen.

TABLE 15.—SEMICOMMERCIAL POULTRY FLOCKS: COST OF PRODUCING A DOZEN EGGS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*
Stock depreciation	1.63	1.36	1.37	....	1.21	1.34	1.13
Mortality	1.69	1.34	1.58	1.52	2.53	2.06	1.79
Feed	5.66	5.79	8.17	11.21	11.30	14.61	9.46
Farm-grown	1.52	1.65	3.03	3.58	3.41	4.09	2.88
Purchased	4.14	4.14	5.14	7.63	7.89	10.52	6.58
Man labor[a]	2.08	2.30	2.38	2.20	2.59	2.35	2.32
Chores	1.61	1.76	1.89	1.66	2.12	1.82	1.81
Special	.47	.54	.49	.54	.47	.53	.51
Horse labor[a]	.17	.16	.09	.17	.15	.08	.14
Auto and truck[a]	.10	.02	.04	.15	.16	.36	.14
Buildings	.44	.34	.38	.42	.50	.40	.40
Equipment	.49	.45	.21	.22	.21	.32	.32
Straw, bedding, and litter	.11	.09	.11	.17	.28	.23	.16
Miscellaneous	.53	.33	.38	.42	.40	.29	.39
Total	12.90	12.18	14.71	16.48	19.33	22.04	16.25
Interest on capital at 5 percent							
Land and buildings	.82	.76	.82	.75	.94	.77	.81
Equipment	.04	.03	.03	.03	.03	.04	.04
Stock	.41	.34	.40	.35	.55	.49	.42
Feed	.04	.03	.01	.02	.03	.02	.02
Total	1.31	1.16	1.26	1.15	1.55	1.32	1.29
Gross cost	14.21	13.34	15.07	17.63	20.88	23.36	17.54
Deductions							
Stock appreciation	....	....	....	.10	....	....	....
Manure	.71	.78	.91	.95	1.09	1.17	.93
Miscellaneous	.01	....	....	.04	.05	.01	.02
Total	.72	.78	.91	1.09	1.14	1.18	.95
Net cost	13.49	12.56	15.06	16.54	19.74	22.18	16.59
Price of eggs per dozen	15.34	15.27	17.00	23.56	23.38	24.32	19.81

[a]See footnote to Table 11.

Net cost of producing 100 pullets. The average net cost of producing 100 pullets of laying age was $51 (Table 16). The value of the byproducts—broilers, manure, and pullet eggs—amounted to $40.42, and this amount was subtracted from the gross cost, $91.73, to obtain the net cost.

In 1937, largely because of high feed costs, the gross cost for 100 pullets was $119 and the net cost $68. Gross costs were lowest in 1933, when they were $72. Net costs were lowest in 1934 ($37).

Amounts and Kinds of Feed Fed

The feed consumed per bird per year by the entire flock, based on the average number of mature birds in the flock, was 96 pounds, composed of the following:

Feed	*Pounds*	*Feed*	*Pounds*
Grain	56	Mill feeds	3.6
Ready-mixed mash	28	Minerals and grit	2
Protein supplements	7		

Of the grain 35 pounds was corn, 14 pounds wheat, and 4 pounds

oats. Milk and meat scraps were the common protein supplements (Table 17).

The laying flock consumed an average of 75 pounds of feed per year per bird. Of the grain 28.5 pounds was corn, 11.5 pounds wheat, and 4 pounds oats (Table 18).

Feed consumed by growing chickens averaged 28 pounds for each pullet raised and placed in the laying house. Of the grain 8.6 pounds was corn, 3 pounds wheat, 1 pound oats, and 1 pound other grains (Table 19).

LAYING FLOCK		GROWING CHICKS	
Feed	*Pounds*	*Feed*	*Pounds*
Grain	47	Grain	13.5
Ready-mixed mash	15	Ready-mixed mash	10
Mill feeds	6	Mill feeds	3
Protein supplements	5	Protein supplements	2
Minerals and grit	2	Minerals and grit	.2

Man and Horse Labor

Man labor, or its equivalent, performed by the operator's family and others averaged 1,000 hours per flock per year, 230 hours for each

TABLE 16.—SEMICOMMERCIAL POULTRY FLOCKS: COST OF PRODUCING 100 PULLETS

Item	1932	1933	1934	1935	1936	1937	Six-year average
Operating expenses							
Eggs for hatching	$ .59	.....	$ 5.97	$ 6.00	$ 4.49	$ 3.28	$ 3.39
Custom hatching	.....	.....	.....	1.83	1.68	1.67	.86
Chicks bought	20.02	$ 16.60	9.03	15.59	16.48	20.02	16.29
Fuel	3.49	2.80	2.71	2.84	3.16	3.28	3.06
Feed	27.68	30.71	40.60	56.68	51.24	66.75	45.60
Farm-grown	7.59	8.16	10.84	9.09	11.37	11.30	9.72
Purchased	20.09	22.55	29.76	47.59	39.87	55.45	35.88
Man labor[a]	11.96	13.00	11.68	12.79	13.00	12.85	12.55
Chores	10.17	10.86	9.75	10.70	11.24	11.41	10.69
Special	1.79	2.14	1.93	2.09	1.76	1.44	1.86
Horse labor, special[a]	.85	.34	.13	.23	.12	.23	.32
Auto and truck[a]	.53	.16	.02	.24	.56	.47	.33
Buildings	1.70	1.41	1.88	1.83	1.97	2.05	1.80
Equipment and supplies	1.97	2.17	1.85	1.84	1.66	2.08	1.93
Straw, bedding, litter	.55	.60	.34	.71	.79	.84	.64
Miscellaneous	1.36	.84	1.66	1.98	2.03	1.51	1.56
Total	$ 70.70	$ 68.63	$ 75.87	$102.56	$ 97.18	$115.03	$ 88.33
Interest on capital at 5 percent							
Land and buildings	$ 2.77	$ 2.12	$ 1.84	$ 2.64	$ 2.97	$ 3.23	$ 2.60
Equipment and supplies	.70	1.05	.86	.71	.73	.77	.80
Total	$ 3.47	$ 3.17	$ 2.70	$ 3.35	$ 3.70	$ 4.00	$ 3.40
Gross cost	$ 74	$ 72	$ 79	$106	$101	$119	$ 92
Deductions							
Broilers and cockerels	$ 26.03	$ 25.84	$ 39.88	$ 39.20	$ 42.24	$ 45.09	$ 36.38
Pullet eggs	.....	.....	.....	3.80	1.66	2.68	1.36
Manure	2.01	1.25	2.02	2.36	2.81	2.89	2.22
Miscellaneous	.....	.....	.....	1.33	.94	.50	.46
Total	$ 28.04	$ 27.09	$ 41.90	$ 46.69	$ 47.65	$ 51.16	$ 40.42
Net cost	$ 46	$ 45	$ 37	$ 59	$ 53	$ 68	$ 51

[a]See footnote to Table 11.

TABLE 17.—SEMICOMMERCIAL POULTRY FLOCKS: FEED FED TO MATURE AND REPLACEMENT STOCK PER 100 MATURE BIRDS

Item	1932	1933	1934	1935	1936	1937	Six-year average
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Grain							
Corn	3 569	4 415	3 469	3 045	3 407	3 062	3 494
Oats	363	356	243	245	651	833	448
Wheat	2 238	1 826	930	1 181	890	1 220	1 381
Other	170	3	133	378	732	315	289
Total	6 340	6 600	4 775	4 849	5 680	5 430	5 612
Mill feeds							
Bran	231	163	164	160	102	118	156
Shorts	35	34	34	74	98	76	58
Middlings	176	90	101	73	102	108	109
Other	3	17	85	25	10	64	34
Total	445	304	384	332	312	366	357
Mixed mash	2 017	1 213	3 112	3 428	3 296	3 560	2 771
Protein supplement							
Milk and buttermilk	117	241	120	153	469	365	244
Meat scraps	367	296	193	206	159	152	229
Soybean meal	24	....	....	....	4	9	6
Other	232	223	172	199	109	261	199
Total	740	760	485	558	741	787	678
Minerals and grit	168	220	179	170	172	224	189
Condiments	15	26	....	....	3	8	9
Cod-liver oil, gallons	1.6	1.4	1.9	.5	.6	.5	1.1
Total feed	9 725	9 123	8 935	9 337	10 204	10 375	9 616

TABLE 18.—SEMICOMMERCIAL POULTRY FLOCKS: FEED FED TO LAYING FLOCK PER 100 HENS

Item	1932	1933	1934	1935	1936	1937	Six-year average
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Grain							
Corn	2 790	3 504	2 880	2 526	2 808	2 579	2 848
Oats	325	293	214	217	551	712	385
Wheat	1 892	1 570	769	966	694	982	1 146
Other	674	....	64	292	502	184	286
Total	5 681	5 367	3 927	4 001	4 555	4 457	4 665
Mill feeds							
Bran	194	112	134	80	83	104	118
Shorts	27	23	29	80	86	57	50
Middlings	140	47	68	80	86	84	84
Other	572	239	756	320	....	325	369
Total	933	421	987	560	255	570	621
Mixed mash	863	493	1 327	1 965	2 172	2 118	1 490
Protein supplement							
Milk and buttermilk	56	207	97	322	107	239	171
Meat scraps	285	235	156	168	119	127	182
Soybean meal	22	....	30	....	3	8	10
Other	238	179	165	159	69	243	176
Total	601	621	448	649	298	617	539
Minerals and grit	152	210	142	163	165	210	173
Condiments	21	25	10	5	4	7	12
Cod-liver oil, gallons	.98	1.4	1.9	.4	.8	.6	1.01
Total feed	8 251	7 137	6 841	7 343	7 449	7 979	7 500
Eggs per hen	140	131	149	131	121	133	130

TABLE 19.—SEMICOMMERCIAL POULTRY FLOCKS: FEED FED TO GROWING CHICKS PER 100 PULLETS PLACED IN THE LAYING HOUSE

Item	1932	1933	1934	1935	1936	1937	Six-year average
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Grain							
Corn	1 121	1 301	777	664	666	622	858
Oats	55	89	38	69	111	199	94
Wheat	499	363	212	242	212	249	296
Other	95	4	84	111	129	172	99
Total	1 770	1 757	1 111	1 086	1 118	1 242	1 347
Mill feeds							
Bran	53	73	40	31	21	26	41
Shorts	11	13	7	31	21	27	18
Middlings	52	61	44	31	21	24	39
Other	205	241	326	309	134	87	217
Total	321	388	417	402	197	164	315
Mixed mash	634	451	1 044	1 167	1 248	1 228	962
Protein supplement							
Milk and buttermilk	88	48	30	67	112	57	67
Meat scraps	118	67	49	48	43	32	60
Soybean meal	3	....	....	....	....	11	2
Other	80	85	61	56	44	61	65
Total	289	200	140	171	199	161	194
Minerals and grit	15	11	20	9	8	10	12
Condiments	5	5	3	2	1	2	3
Cod-liver oil, gallons	.8	....	....	.1	.1	.1	.18
Total feed	3 034	2 812	2 735	2 837	2 771	2 807	2 833

100 hens, or .21 hour for each dozen eggs produced (Table 20). Four-fifths of the labor was utilized in feeding, gathering eggs, and performing daily chores with brooding chicks. One-fifth was spent in doing such special jobs as cleaning the house, plowing up the lots, building fences, and delivering eggs.

Approximately 75 hours of horse labor was used per flock in

TABLE 20.—SEMICOMMERCIAL POULTRY FLOCKS: TIME SPENT IN CARING FOR POULTRY FLOCK

Item	1932	1933	1934	1935	1936	1937	Six-year average
Number of flocks	21	20	37	36	63	66	40
Number of hens per flock	510	510	430	422	357	376	434
Number of pullets produced	354	360	326	330	321	301	332
Number of eggs per flock, dozens	5 955	5 570	4 529	4 601	3 607	4 168	4 738
Total hours of man labor[a]	1 126	1 132	974	958	901	909	1 000
Chores	884	888	783	745	750	734	797
Special	242	244	191	213	151	175	203
Hours of man labor per unit[a]							
Per 100 hens	221	220	227	227	252	242	230
Per 100 dozen eggs	19	21	22	21	25	22	21
Hours of horse labor	127	98	45	85	57	42	76

[a]See footnote to Table 11.

plowing lots, moving brooder houses, and doing similar jobs. The time of men and horses used in hauling feed to be ground or hauling it from town to the farm was not charged to the poultry enterprise.

Factors Influencing Profits and Costs

It is obvious that larger profits can result only from increased income, reduced expense, or a combination of both. Farms which show a large profit are those on which costs are kept as low as possible without sacrificing quantity of production or quality of product.

The records obtained on these semicommercial poultry farms make it possible to show the relationship between profits and such factors as the following:

1. Cost of feed
2. Cost of labor
3. Cost of stock replacement
4. Size of flock
5. Number of eggs per hen
6. Percentage of pullets in the laying flock

Costs of feed and labor. The two largest costs in producing eggs are, of course, feed and labor. These costs fluctuated so violently that their true effect on profit can be given more accurately in terms of the average cost of producing a dozen eggs than in terms of cost per bushel of feed and cost per hour of labor. This relationship is shown for each of the six years in Table 21, which indicates that at the price levels existing during the period of this investigation and as an average for the six-year period, a decrease of one cent in the cost of producing a dozen eggs meant about $27 more profit per flock. The same data are shown graphically in Fig. 2.

Costs of feed can obviously be reduced by making liberal use of home-grown feeds, using feed hoppers designed to minimize wastage, and keeping enough hens to warrant buying in ton lots such ingredients

TABLE 21.—SEMICOMMERCIAL POULTRY FLOCKS: PROFIT PER FLOCK AS RELATED TO COST OF PRODUCING A DOZEN EGGS[a]

Cost per dozen eggs	1932	1933	1934	1935	1936	1937
	Profit per flock					
cents						
5–14.9	$ 211	$ 240	$ 193	$ 544	$ 334	$ 444
15–24.9	−55	8	−50	238	189	144
25–34.9	*−201*	.....	*−317*	*−95*	−142	−65
35–44.9	.....	.....	.....	*−281*	*−146*	*−531*
45–54.9	.....	.....	.....	.....	*−688*	*−175*

[a]Figures in italics are based on the results from less than five flocks. Ordinarily the results from fewer than five flocks would be considered of little significance; but where the figures for the smaller groups show the same trend as the figures for the larger groups, it may be assumed that they also are a fair index of the relation between cost and profit.

as meat scrap, bran, and middlings. They can be reduced by more efficient ways of doing certain jobs—if special equipment and convenient arrangement of buildings make it possible to care for 50 percent more hens with a given amount of help, more dozens of eggs will be produced per man, and a lower labor cost per dozen will result.

Cost of replacements. At 1932-1937 price-levels and as an average for the six-year period, a 10-percent increase in mortality during the years of this study increased the cost of producing eggs by about

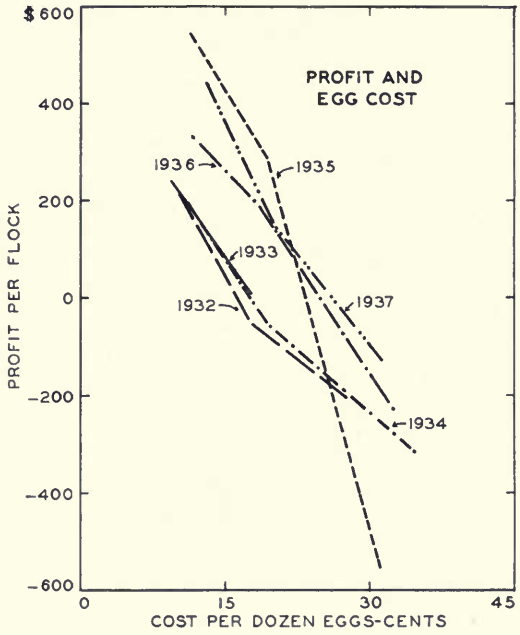

Fig. 2

Large differences in profits resulted from small differences in cost. Every one-cent more a dozen in the cost of producing eggs meant a marked decrease in the profit per flock (*see also Table 21*).

2.5 cents a dozen and reduced the profit about $100 per flock, Table 22 shows. (See also Figs. 3 and 4.) Death losses among laying hens and pullets ranged from less than 10 percent to more than 50 percent.

Mortality can be reduced by the following known methods: choosing long-lived hens that can lay from two to four years; breeding from old hens and males that are sons of old hens, and from hens and males whose offspring have lived and laid well (difficult to do when all chicks are purchased annually); determining, if loss is due

TABLE 22.—SEMICOMMERCIAL POULTRY FLOCKS: PROFIT PER FLOCK AND COST OF PRODUCING A DOZEN EGGS AS RELATED TO PERCENTAGE OF MORTALITY OF HENS[a]

Percentage of mortality	1932	1933	1934	1935	1936	1937
			Profit per flock			
Under 14.9	$162	$195	$191	$398	$317	$157
15–19.9	*208*	296	54	454	233	73
20–24.9	128	*92*	*−64*	349	105	104
25–29.9	*86*	*96*	*−60*	162	6	−25
30–39.9	−44	*73*	21	123	29	*45*
40 and over	...	...	...	*−21*	*−136*	*16*
			Cost of producing a dozen eggs[a]			
	cents	*cents*	*cents*	*cents*	*cents*	*cents*
Under 14.9	10.97	11.14	11.55	15.15	15.47	20.76
15–19.9	*8.75*	9.20	14.24	16.37	17.91	22.58
20–24.9	14.84	*12.46*	*20.45*	17.07	20.29	21.70
25–29.9	*16.24*	*16.37*	*18.60*	18.85	22.63	23.18
30–39.9	17.15	*14.00*	15.50	19.78	22.40	*24.84*
40 and over	.....	.....	.....	*24.77*	*29.67*	*25.88*

[a]See footnote to Table 21.

TABLE 23.—SEMICOMMERCIAL POULTRY FLOCKS: PROFIT PER FLOCK, COST OF PRODUCING A DOZEN EGGS, AND INVESTMENT PER HEN AS RELATED TO NUMBER OF HENS PER FLOCK[a]

Number of hens	1932	1933	1934	1935	1936	1937
			Profit per flock			
Less than 300	$117	$120	$ 46	$173	$ 80	$ 8
300–499	35	216	55	428	136	110
500–699	350	264	124	406	271	243
700 and over	−37	*70*	*44*	*323*	*164*	292
			Cost of producing a dozen eggs[a]			
	cents	*cents*	*cents*	*cents*	*cents*	*cents*
Less than 300	8.47	10.07	14.03	16.49	19.53	23.24
300–499	15.09	8.75	15.45	15.67	19.00	20.44
500–699	10.06	11.18	*13.63*	17.31	19.01	18.95
700 and over	17.84	*16.69*	*15.95*	*21.68*	*23.36*	24.19
			Investment per hen			
Less than 300	$1.98	$2.87	$2.74	$3.41	$3.95	$3.30
300–499	2.75	1.78	2.41	2.31	2.68	2.64
500–699	1.99	1.83	1.93	2.63	2.64	2.35
700 and over	4.36	*3.75*	*3.68*	*3.70*	*3.98*	3.14

[a]See footnote to Table 21.

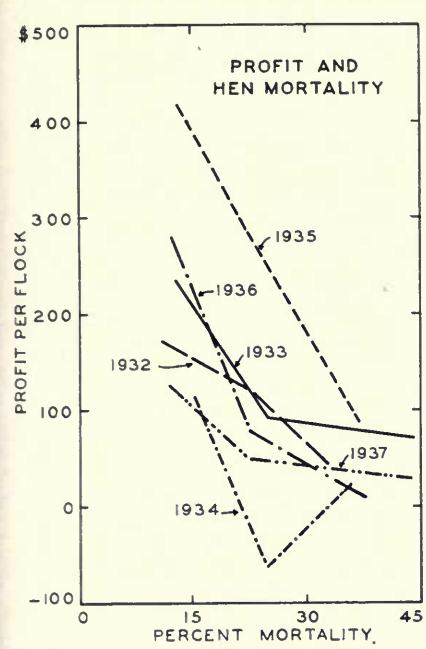

Fig. 3

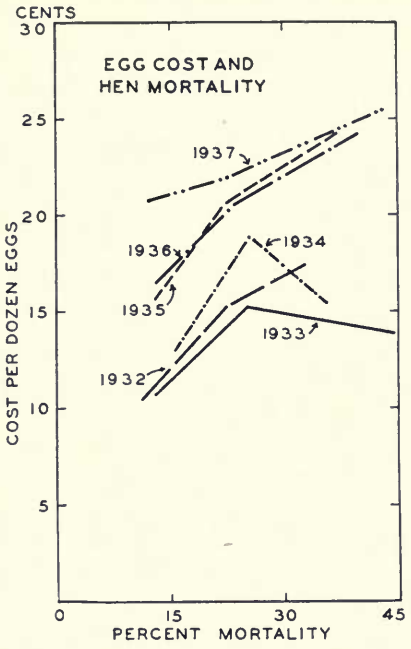

Fig. 4

An increase of 10 in percentage of mortality was accompanied in three of the six years by a reduction of more than $100 in flock profits and in all but two years by an increase of more than 2 cents a dozen in the cost of producing eggs.

to a disease, just what the disease is and applying suitable control measures. If losses are due to "occupational disorders" of laying hens, the best procedure may be to replace the entire stock with a more vigorous strain.

Size of flock. Six hundred appeared to be the most efficient number of hens for the semicommercial poultry flocks included in this study, none of which contained more than 1,000 hens. In five of the six years, flocks of about 600 hens showed a larger profit than flocks of 700 and over; and in each year except 1935, flocks of 600 hens were more profitable than either of the two smaller size groups shown in Table 23. In three of the six years there were fewer than five flocks which had as many as 700 hens. When all the flocks are divided into three groups according to size, and the data analyzed on that basis, as in Fig. 5, the fact that the larger flocks returned less profit than the 600-hen flocks is not so apparent.

One reason why the 600-hen flocks were most profitable is that the investment per hen was about half as great as in flocks of about 900 hens, and that in nearly every case the flocks of less than 300 hens had

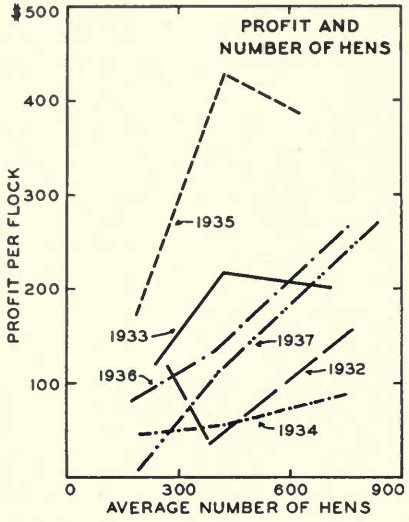

Fig. 5

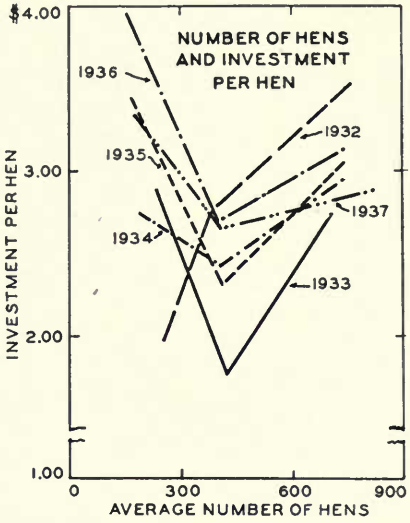

Fig. 6

An increase in flock size tended to increase profits, but there was a departure from this trend in three years of the study. In all years except 1932, flocks of about 400 hens had a lower investment per hen than did either larger or smaller flocks.

a higher investment per hen than did the 600-hen flocks (Table 23 and Fig. 6). A second reason is that in most years the man-labor cost per hen was lower in flocks of about 400 and about 600 hens than in either larger or smaller flocks (Table 24 and Fig. 7). Studies of commercial poultry flocks in other states have shown that increasing the size of a flock above 1,000 hens brings increased profits, and this principle would probably also apply to Illinois commercial flocks.

The effect of flock size on the cost of producing a dozen eggs was relatively small (Table 23 and Fig. 8).

TABLE 24.—SEMICOMMERCIAL POULTRY FLOCKS: MAN-LABOR COST PER HEN AS RELATED TO NUMBER OF HENS PER FLOCK[a]

Number of hens	Man-labor cost per hen					
	1932	1933	1934	1935	1936	1937
Less than 300	$.185	$.247	$.271	$.227	$.302	$.271
300–499	.257	.215	.246	.216	.241	.230
500–699	.240	.233	.233	.253	.256	.162
700 and over	.262	*.271*	*.266*	*.334*	*.279*	.325

[a]See footnote to Table 21.

Number of eggs per hen. The effect of egg production per hen on the profit per flock and on the cost of producing a dozen eggs is shown in Table 25 and Figs. 9 and 10. They reveal that at the price-levels prevailing during this study and as an average for the six-year period, an increase of 10 eggs per hen per year increased the flock

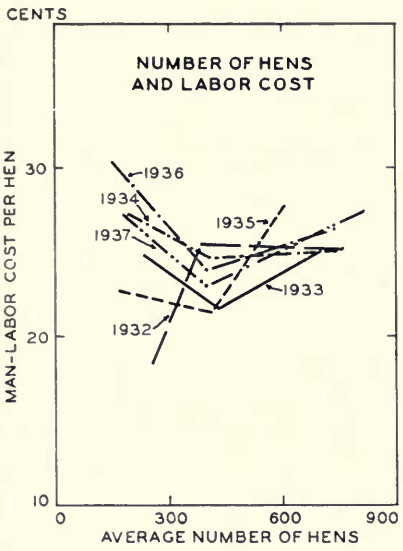

Fig. 7

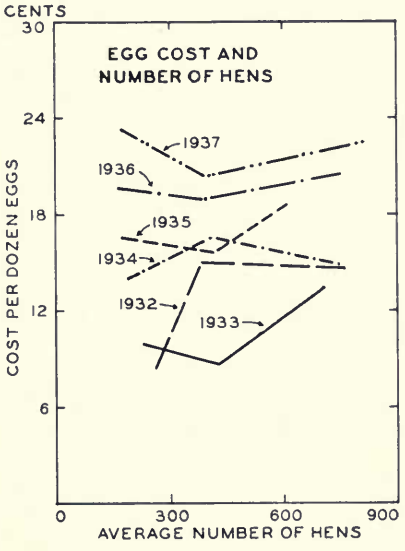

Fig. 8

Man-labor cost per hen was lower in flocks of about 400 hens than in either larger or smaller flocks except in 1932. Flock size in all but two years had relatively little effect on the cost of producing a dozen eggs.

profit by about $50 and reduced the cost of producing eggs by more than a cent a dozen. The general trend is the same for all years—profits increased and costs decreased as the egg yield increased.

Egg production can often be increased, of course, by liberal feeding of the right kind of feeds and by breeding hens that are genetically high producers.

Percentage of pullets in laying flock. The ratio of pullets to hens in the laying flock had no consistent effect on either cost of production or flock profits (Table 26 and Figs. 11 and 12). A slight trend toward higher costs occurred as the percentage of pullets increased; each 10-percent increase in the proportion of pullets added about 2 cents to the cost of producing a dozen eggs, altho considerable deviation from this trend was discovered in individual years. In general the flocks containing the higher percentages of pullets were somewhat less profitable.

TABLE 25.—SEMICOMMERCIAL POULTRY FLOCKS: PROFIT PER FLOCK AND COST OF PRODUCING A DOZEN EGGS AS RELATED TO NUMBER OF EGGS PER HEN[a]

Eggs per hen	1932	1933	1934	1935	1936	1937
			Profit per flock			
Less than 109.9	*$−141*	$ −56	$−122	$ 68	$−39	$−117
110–129.9	49	135	58	200	66	106
130–149.9	165	279	180	294	239	98
150–169.9	*97*	*337*	196	406	436	179
170 and over	*566*	*426*	.....	816	...	430
			Cost of producing a dozen eggs			
	cents	*cents*	*cents*	*cents*	*cents*	*cents*
Less than 109.9	*19.62*	17.64	19.93	21.77	24.00	27.11
110–129.9	13.63	12.94	14.47	17.82	20.01	21.18
130–149.9	13.58	10.43	14.26	18.09	18.96	23.09
150–169.9	*15.41*	*9.35*	12.21	15.09	14.91	20.80
170 and over	*6.68*	*8.53*	.....	12.53	.....	16.71

[a]See footnote to Table 21.

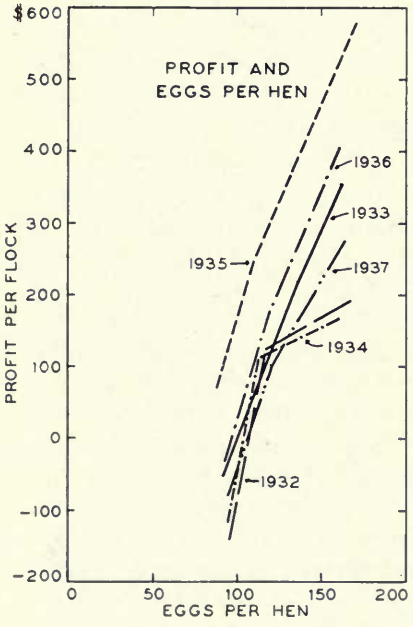

Fig. 9

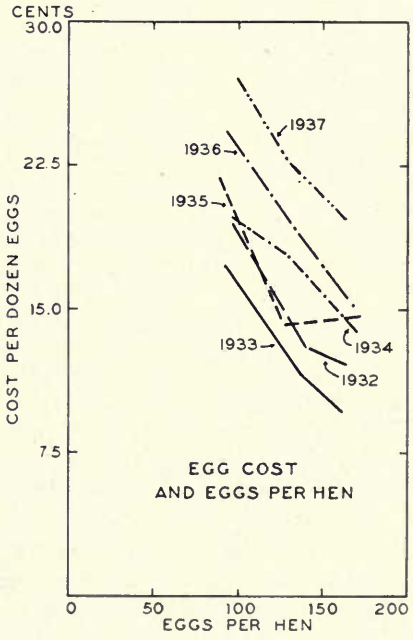

Fig. 10

Ten eggs more per hen per year increased the flock profit by about $50 in four of the six years and reduced the cost of production by more than a cent a dozen in all years except 1935.

TABLE 26.—PROFIT PER FLOCK AND COST OF PRODUCING A DOZEN EGGS AS RELATED TO PERCENTAGE OF PULLETS IN THE LAYING FLOCK[a]

Percent of pullets	1932	1933	1934	1935	1936	1937
			Profit per flock			
Under 30	....	....	*$−150*	$409	*$141*	*$−71*
30–39.9	$151	*$323*	*139*	208	*211*	*240*
40–49.9	90	100	138	*864*	206	184
50–59.9	94	276	107	335	164	65
60–69.9	*239*	*116*	16	176	37	22
70–79.9	26	....	*101*	*310*	64	72
80 and over	....	*176*	*−40*	280	117	83
			Cost of producing a dozen eggs			
	cents	*cents*	*cents*	*cents*	*cents*	*cents*
Under 30	....	....	*21.79*	18.13	*14.38*	*25.26*
30–39.9	*5.84*	*6.90*	*12.93*	17.20	*16.05*	*25.74*
40–49.9	14.04	14.03	12.08	*10.60*	18.36	19.83
50–59.9	13.94	11.69	13.52	17.29	19.41	21.69
60–69.9	*12.74*	*8.84*	18.02	18.66	22.82	23.96
70–79.9	16.02	....	*12.43*	*16.31*	22.54	21.46
80 and over	....	*9.57*	*17.59*	15.91	18.97	20.83

[a]See footnote to Table 21.

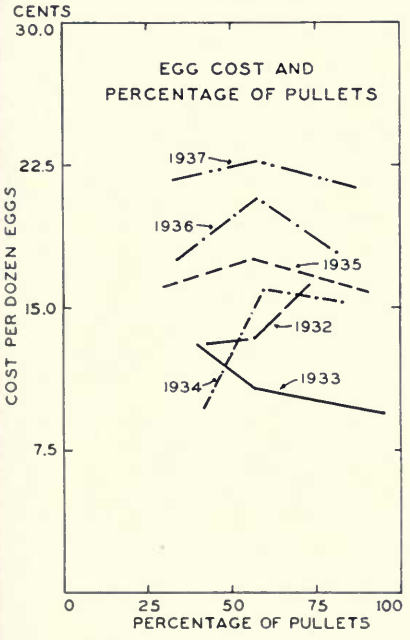

Fig. 11

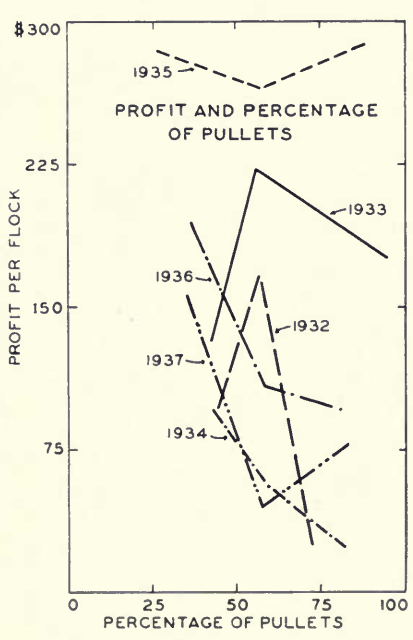

Fig. 12

Flocks containing about 60 percent pullets tended to have the highest cost per dozen eggs in all but two years, but ratio of pullets to hens had no consistent effect on flock profits.

When the flock size is being increased on an individual farm, the percentage of pullets will be higher than in an established business that has a uniform or constant size of flock.

How Profits Were Influenced by Four Efficiency Factors

The result of grouping the records of farms for all six years according to the number of important factors in which certain farms were better than most farms is shown in Table 27. Measurements used were: (1) size of flock, (2) eggs per hen per year, (3) laying flock mortality, (4) proportion of pullets in the laying flock.

As has been indicated, on the basis of a single-factor difference the more profitable farms surpassed the average farm with 434 hens by having larger flocks (500 to 700 birds), higher egg production, lower flock mortality, or a smaller proportion of pullets.

When all records for all years were combined, 22 farms were found which excelled in none of these four factors. These farms had an average net yearly profit of only $31. A net profit of $37 was the average for 72 farms excelling in one factor.

Profits were definitely increased when farms excelled in two, three, and four of the measures. The average annual net profit for 87 farms excelling in two was $114; for 55 farms excelling in three, $274; and for 21 farms excelling in all four, $441.

Net profit of individual farms in the different groups is also of interest. The highest net profit obtained by any one of the 22 farms which excelled in none of these measures was only $328 and the lowest "net profit" was a loss of $469. In striking contrast, the 21 farms which excelled in all four measures included one farm with a net profit of $988 and one with $85.

The semicommercial poultry farms that were really profitable had (1) healthy hens which laid well and lived long, (2) a low enough percentage of pullets to avoid excessive replacement costs, (3) flocks of about 600 birds. How profitable flocks larger than 1,000 birds would have been was not shown in this study.

TABLE 27.—SEMICOMMERCIAL POULTRY FLOCKS: NET PROFIT OF FLOCKS AS INFLUENCED BY NUMBER OF FACTORS IN WHICH THEY EXCELLED

(Four factors considered: size of flock, eggs per hen, mortality, proportion of pullets in laying flock)

Number of factors in which flocks excelled	Number of flocks	Net profit per flock
None	22	$ 31
One	72	37
Two	87	114
Three	55	274
Four	21	441

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